



## Light Robotics and its potential for integrating with magnetic carriers.

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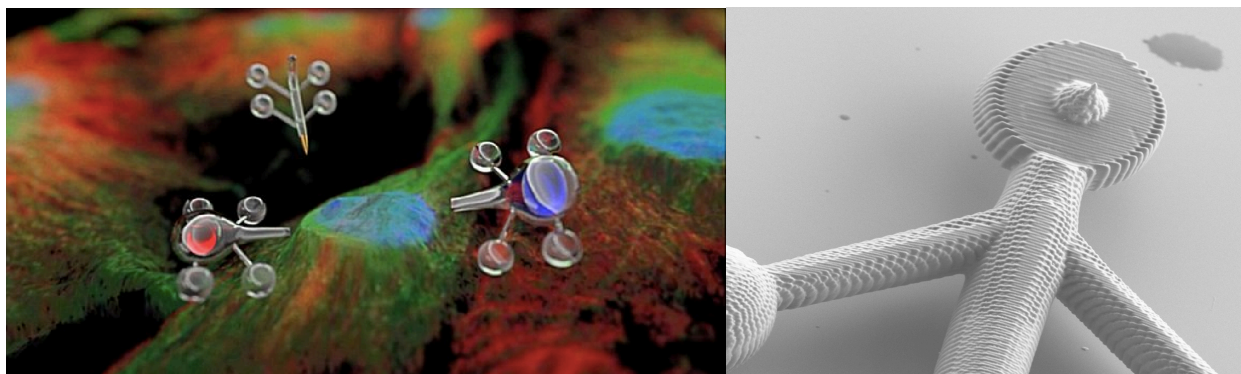
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## INVITED TALK

### Light Robotics and its potential for integrating with magnetic carriers

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In our globalized world of R&D there is a constant evolvement of scientific disciplines generating new offspring or sub-disciplines that combine the favorable characteristics from its forerunners. A contemporary example is the merger of biology and photonics producing one such new offspring, Biophotonics, which is harnessing light to study biological materials. Subsequently, we have seen the powerful merger of biophotonics with contemporary nanophotonics into so-called NanoBiophotonics culminating with the 2014 Chemistry Nobel Prize for super-resolution microscopy, now simply coined Nanoscopy. After years of working on light-driven trapping and manipulation, we can see that a confluence of developments is now ripe for the emergence of a new area that can contribute to nanobiophotonics – *Light Robotics* – which combines advances in microfabrication and optical micromanipulation together with intelligent control ideas from robotics, wavefront engineering and computational optics. In the Summer 2017 we published a ca. 500 pages edited Elsevier book volume covering the fundamental aspects needed for Light Robotics including optical trapping systems, microfabrication and microassembly as well as underlying theoretical principles and experimental illustrations for optimizing optical forces and torques for Light Robotics. The Elsevier volume is presenting various new functionalities that are enabled by these new designed light-driven micro-robots in addition to various nano-biophotonics applications demonstrating the unique use of biophysical tools based on light robotic concepts. We have endeavored to make this new discipline accessible to a broad audience from advanced undergraduates and graduate students to practioners and researchers not only in nanobiophotonics and micro- and nanotechnology but also to other areas in optics, mechanical engineering, control and instrumentation engineering and related fields. My talk will try to cast new light on identifying new scientific inspiration on Light Robotics' potential for integrating with magnetic carriers for targeted drug delivery and/or related emerging, interdisciplinary nanobio-applications.



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